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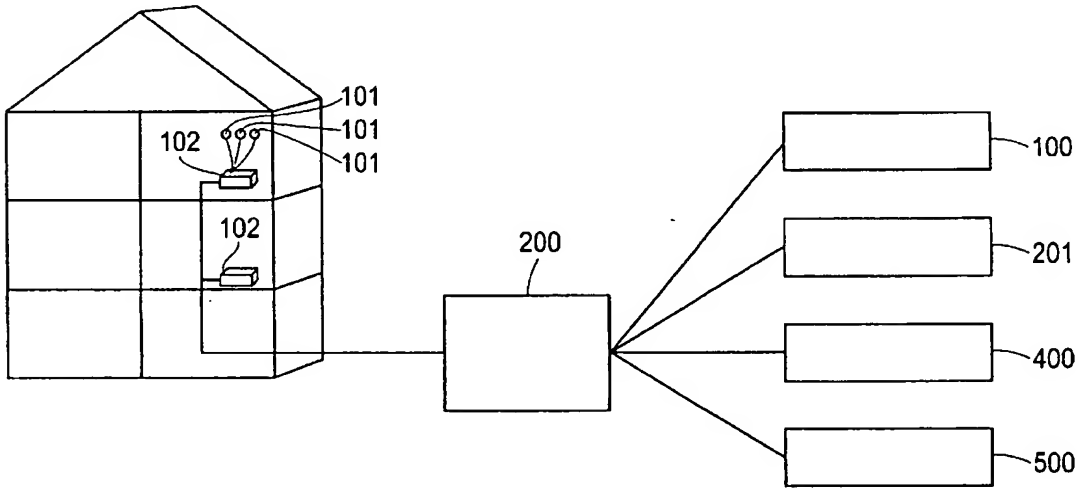


(57) Abstract: The present invention refers to a system and a method for both personal and material alarm services. The system according to the invention comprises a number of alarm subscribers (100), which in e.g. their homes have sensors (10) communicatively coupled to a collecting unit (102) or a router/switch. The collecting unit (102) or the router/switch is communicatively coupled to an externally arranged central alarm server (200). At an alarm signal from any of the sensors (101), the collecting unit (102) or the router will send an alarm signal to the central alarm server (200), which unit after a certain alarm delay transmits the alarm further to a number of alarm receivers (500) and/or central alarm unit (400) defined by the subscriber (100). By means of the alarm delay in the central alarm server (200) the system provides a subscriber (100) to cancel an alarm within a predefined time period, but the system prevents an unauthorized person, e.g. a burglar, from stopping the distributed alarm signal by cutting off an alarm signal by cutting off an alarm cable or destroying the locally arranged components (101, 102).

WO 02/01531 A1

A SYSTEM FOR ALARM SERVICES

THE TECHNICAL FIELD OF THE INVENTION

The present invention refers to a system for personal and material alarm services, and especially such services provided by an alarm system comprising an automatic alarm distribution and an alarm delay in an external unit.

BACKGROUND OF THE INVENTION

Today, alarm services are provided by for example specialized security companies having an administration at a central alarm unit and a security guard that personally guard the surveyed object. Characteristics for this type of alarm services are that they require a relatively large number of operating personnel and have a limited capacity to a high price level. Usually, the services are directed towards companies and private persons having objects with a high protective value. At the same time, these types of alarm services are quite inflexible and it is hard to combine material surveillance and person related safeguarding within the same organization.

Prior art

The English patent application GB 2 325 548 shows a system for safety alarm. The system comprises a plurality of sensors arranged in e.g. a home. The sensors are wireless or wired connected to a locally means for alarm control and a web browser. The means for alarm control communicates with a central surveying station by means of a common telephone line or an ISDN connection. When any of the sensors sends an alarm, the employees at the surveying station may take necessary measures. Further, the alarm owner may by means of a computer with Internet access via the central surveying station activate or deactivate the sensors.

The Japanese patent JP 11 033 481 shows an apparatus having Internet access that continuously survey the signals form the alarm sensors. If a sensor sends an alarm, a possibly ongoing Internet communication will be interrupt and an alarm message, in the shape of e.g. an electronic mail, will be sent to a central unit.

In the US patent US 4,257,038, an electronic security system is shown. The system comprises a plurality of sensors connected to a locally arranged alarm unit by means of radio waves. Alarm signals from the sensors are coded in a way that a prioritizing of the alarm is possible in the alarm unit. Further, a delay of alarm is possible in the locally arranged alarm unit. The alarm unit may further be connected to other security units by means of automatic telephone dialing.

A disadvantage with the prior art is that they do not comprise automatic alarms to a number of different alarm receivers, which receivers are defined by the alarm subscriber. Further, the alarm subscriber has defined in which way the receivers are alarmed and in

which order of priority the alarm receivers are alarmed and in which order of priority the alarms are distributed.

Another disadvantage with prior art is that a delay of an alarm signal is performed locally, i.e. in the locally arranged alarm unit, wherein e.g. a burglar may interrupt an alarm by cutting an alarm cable or destroying the alarm unit.

Object of the invention

The object of the invention is to provide material and personal alarm services, and especially alarm services to multiple family housing at a price that is acceptable for the alarm buyer. Another aspect is to handle a large number of alarm service and alarm buyers within the same organization. A further aspect of the object is to make it possible to use a central alarm unit for more alarm buyers than it is dimensioned for. Yet a further aspect of the object is to provide a system that is insensitive for sabotage.

SUMMARY OF THE INVENTION

Thus, the present invention refers to an alarm system for personal and material alarm services. The system according to the invention comprises sensors arranged within a surveyed or monitored area, e.g., a home. The sensors are communicatively coupled to a sensor signal collecting unit, which unit preferably also is arranged within the surveyed area. Further, the collecting unit is communicatively coupled, preferably wireless by means of a broadband connection, to a central alarm server arranged outside the surveyed area or at least remotely from the surveyed object or person. Thus, this central alarm server constitutes an externally arranged alarm server. Upon an alarm triggered by a sensor, an alarm signal is transmitted from the sensor, via the collecting unit, to the central alarm server, which after a certain alarm delay distributes the alarm, wireless or wired, to one or several alarm receivers or central alarm units defined by the alarm subscriber. The alarm delay means a time delay of the alarm before it is transmitted further to one or several alarm receivers, or to a central alarm unit, or before a centrally arranged siren is started. This time delay makes it possible for an alarm subscriber to cancel an alarm. This is for example desirable when the subscriber by mistake triggered a burglar alarm when she/he comes home to hers/his home. The subscriber may then cancel the alarm by logging in to hers/his user specific web site by means of a cellular phone and by giving a user name and a password, for example a PIN-code, or by calling the central alarm server by means of a telephone, and thereby get access to the alarm services. Further, the alarm may be canceled by a remote control communicatively connected, preferably wireless, to the sensors. For example may the subscriber, when coming home from work, by means of the remote control change the alarm profile from *out* to *home*, whereby an alarm signal from the burglar alarm is canceled.

Since the alarm is immediately transmitted from the sensors, directly or via the collecting unit, to the central alarm server and since the alarm delay is arranged externally, i.e. outside the surveyed area, the system prevents an unauthorized person, e.g. a burglar, to interrupt an alarm by cutting an alarm cable or by destroying the sensors and/or the collecting unit, which are arranged within the surveyed area.

Further, the subscriber may communicate wireless or wired, by means of e.g. telephones, cellular phones or Internet, with the central alarm server to i.a. receive information about hers/his alarm services and sensors, to add or withdraw services or to activate or deactivate a certain sensor.

BRIEF DESCRIPTION OF A DRAWING

The present invention will be described in more detail with reference to the following drawing, showing figures of exemplifying embodiments, in which:

Fig. 1 shows an overview of an alarm system according to the present invention;

Fig. 2 shows schematically a more detailed figure of the alarm system according to the invention;

Fig. 3 shows an example of different alarm profiles;

Fig. 4 shows schematically a flow chart of a control method and a control program according to an embodiment of the invention;

Fig. 5 shows schematically a flow chart of exemplifying method steps for the management of the sensor signals from a smoke detector; and

Fig. 6 shows schematically a flow chart of the control method and control program for the management of heart beat messages according to an embodiment of the invention.

Definitions

The expression *communicatively coupled* or *communicatively connected* refers to two units wireless and/or wired connected to each other in such a way that they can communicate and interact with each other. *Wired* refers to the units connected with each other by means of a wire, a cable, a pipe or a conduit, such as a signal cable, telephone line, ISDN (Integrated Service Digital network) or network of broadband. *Wireless* refers to the units being connected to each other by means of radio wave, infrared connection or the like and communicating with each other by means of cellular phones, WAP (Wireless Application Protocol), IP Internet Protocol, computer program variables, or the like.

DETAILED DESCRIPTION OF THE INVENTION

The above-mentioned objects are achieved with an alarm system according to the present invention, which system will be described with reference to the accompanying drawings. With a system according to the invention a physical person or a legal entity, may have a subscription on a number of alarm services provided by the system. The system

according to the present invention, an overview of which is shown in figure 1, comprises at least one sensor 101 arranged within a by an alarm subscriber 100 desired area for surveillance. The sensors 101 are communicatively connected to a collecting unit 102 arranged within the surveyed area. However, in one embodiment of the invention, all the sensors 101 are integrated to a single sensor unit that communicates with a collecting unit 102, also called base station 102. In another embodiment of the invention, the sensors 101 are integrated with the collecting unit 102 to an integrated alarm unit communicating with an alarm server 200. Further, the collecting unit 102 is connected, by means of a broadband connection, to a centrally arranged alarm server 200.

Further, the system comprises a communication interface, by means of which, subscribers 100, an administrator 201, one or several central alarm units 400 and alarm receivers 500 may communicate with the central alarm server 200. An alarm receiver 500 may for example be the alarm subscriber 100 himself, a caretaker or another receiver defined by the alarm subscriber 100. The central alarm unit 400 is constituted of for example a fire brigade, an ambulance, a security company or a combination of these.

An alarm triggered by a sensor 101 is distributed from the sensor 101 to the collecting unit 102 and then to the central alarm server 200. Then the central alarm server 200 distributes the alarm, after a certain predetermined period of time to one or several alarm receivers 500 or a central alarm unit 400, defined by the subscriber 100. This time delay of the alarm, the so called alarm delay, occurs thus outside the surveyed area or remote from the surveyed object or person, and makes it possible for a user 100 to cancel or interrupt an alarm, but prevent a burglar from stopping a transmitted alarm by sabotage of the locally arranged alarm unit 101,102. Thus, with an alarm delay according to the invention, a transmitted alarm may only be canceled by an authorized person, such as the alarm subscriber 100 himself.

Further, the subscriber 100 communicates, wireless or wired, by means of any communication interface, with the central alarm server 200 to i.a. receive information about hers/his alarm services and sensors 101, to add or withdraw services or to activate or deactivate a certain sensor 101. The administrator 201 creates and adds new subscriber 100, connects user name of the subscriber 100 to the password of the subscriber 100, an to connect the collecting unit 102 of the subscriber 100 to the alarm services of the subscriber 100.

In a more detailed description, as shown in figure 2, the system comprises a number of sensors 101, for example smoke detectors in fire alarms, magnets attached to doors and/or windows, and/or IR-detector (infrared detectors) in burglar alarms, and manual alarms. The sensors 101 may also comprise surveillance cameras, sirens, electrical door locks, light arrangements and gas detectors. Usually, the manual alarms, such as personal safety alarm and attack alarm, are constituted of for example a push-button or another means that the user manually activates to call for help. Usually, the push-button in a safety

alarm is arranged in a special bracelet carried by the user, whereby the user when needed easily may call for help, but it may also be arranged in another way easily accessible for the user. The safety alarm and the attack alarm may also comprise a microphone or a speaker, whereby a two-way communication is achieved between a calling person and an alarm receiver 500. Further, may the sensors 100 show one of several sensor status, e.g. *on*, *off*, *alarm*, *sabotage* or *undefined*. The sensor status *off* implies that the central alarm server 200 does not react on sensor signals.

The sensors 101 are, as shown in figure 2, communicatively coupled to a collecting unit 102 comprising a checking and control unit 103, also checking device 103. The checking device 103 checks, preferably automatically and periodically, e.g. once a minute, the sensors 101 to receive information about their status and to check whether the connection with the sensors 101 is working. Further, the collecting unit 102 is communicatively connected to a central alarm server 200, preferably by means of a broadband connection, but other connections fulfilling the requirements of accessibility and transmission rates are also possible. The collecting unit 102 has further a unique IP-address or another unique address, whereby the central alarm server 200 may identify the collecting unit 102. If the checking device 103 does not receive status information from any of the sensors 101 or if the unit 103 discover a fault, the collecting unit 102 will send a signal reporting this to the central alarm server 200. A confirmation of a working connection between the sensors 101 and the collecting unit 102, will also be sent to the central alarm server 200, preferably is this confirmation sent periodically, e.g. once per minute or in another selected time interval. The central alarm server 200 is thus collecting information from all the collecting units 102, and may thus take necessary measures if a fault is detected in any of the sensors 101, collecting units 102 or in any connection between them. A suitable measure may for example be to send an alarm message to the subscriber 100 or another alarm receiver 500 telling that a fault has been detected.

The central alarm server 200 comprises a control unit 220, a check unit 230 and a memory 240. The control unit 220 comprises a server 221 managing the interactions between the central alarm server 200 and the components or entities comprised in or interacting with the system, such as the collecting unit 102, the subscribers 100, the administrator 201, central alarm units 300 and alarm receivers 500. Further, the control unit 220 comprises an alarm distribution means 222 managing the choice of alarm receiver 500, the choice of way of alarm distribution and in which order these are to be prioritized. In the system according to the invention, an alarm is to be confirmed by an alarm receiver 500 or a central alarm unit 400 within a predetermined time period, e.g. a minute, from the point of time when the alarm was sent. If the alarm receiver 500 or the central alarm unit 400 do not confirm the alarm within this period of time, the alarm distribution means 222 will select an new distribution way and/or another alarm receiver 500 or central alarm unit 400 according to a priority order predefined by the subscriber 100 or by the administrator 201.

The check unit 230 performs a functionality control of all the components comprised in the system, such as SQL server (Structured Query Language), MIIS (Microsoft Internet Information Server), MTS (Microsoft Transaction Server) or the connections between the central alarm server 200 and the collecting unit 102 and the central alarm unit(-s) 400, respectively. The connection between the central alarm server 200 and the central alarm unit(-s) 400 is preferably constituted by a cable or an ISDN connection, but another communicative connection is also possible. Further, the functionality check is preferably performed automatically and periodically, e.g. each tenth minute. If any of the communications does not work, an alarm is triggered to a predefined alarm receiver 500. Thus, the check unit 230 will check if the central alarm server 200 within a predetermined time period has received information from all the comprised sensors 101 via the collecting units 102 and if the connections with these sensors 101 are working. Together with the functionality check, the check unit 230 checks further the connection with the WAP-gateway and the SMS-gateway so that the system is communicatively connected to subscribers 100 and/or alarm receivers 500 using these communication means.

The memory 240 is arranged in such a way that the alarm server 200 may store information about the alarm services of a subscriber 100 in a for the subscriber specific memory part. Examples of information stored is status information about the sensors 101, the collecting units 102, results from functionality checks, activation and deactivation of sensors, confirmation and non confirmation of alarms, alarms for which the alarm distribution means 222 has changed alarm distribution, either to another alarm receiver 500 or to another way of alarm distribution. Further, the time and date for the alarms, system errors etc are stored. This information may further be stored in an externally arranged database 300 or in another means for storing information. The information or parts of the information is available for the subscriber 100, by a communication interface, wherein the user 100 may check and control which sensors that are activated or deactivate, or if he/she for example usually forgets activate the burglar alarm. Further, the administrator 201 receives all information about a subscriber's 100 alarm services, wherein the information or parts of the information may be given to e.g. an insurance company. This could be the case, if for example the insurance company after a fire in the subscriber's 100 home wants to know whether the subscriber 100 had the fire alarm activated or not.

The central alarm server 200 is communicatively coupled to one or several subscribers 100 and to a number of the subscriber 100 defined alarm receivers 500 and to one or several central alarm units 400. The central alarm server 200 comprises a communication interface 210 by means of which interfaces the subscribers 100 and the administrator 201 may interact with the system and by means of which interfaces the system sends alarms to the alarm receivers 500 and to the central alarm units 400 and by means of which interfaces the system may communicate with an externally arranged

database 300.

The communication interface 210 comprises, as already mentioned, interfaces by means of which the subscriber 100 may interact with the system, such as HTML (HyperText Markup Language) and WML (Wireless Markup Language), interfaces for interaction by means of Internet, interfaces for ordinary telecommunication, SMS (Short Message Service) and interfaces for mobile communication. However, other interfaces may also be implemented in the alarm system according to the invention. For example may the subscriber 100, by means of the interface managing HTML, from a standard Internet browser log in on a user specific web-site, by giving hers/his user name and password. On the web site, the subscriber 100 has access to information about alarm services and the subscriber 100 may perform a number of operations coupled to these alarm services. The interface managing WML allow the subscriber 100 to, via a mobile phone or a telephone subscription supporting WAP, log in on hers/his user specific web site by means of hers/his user name and password. Further, the interfaces managing ordinary telecommunication and mobile telecommunication, supports a user 100, by means of for example a common telephone having push-buttons or a cellular phone, to dial up the system and thereby to get access to the alarm services by means of giving the user name and the password, e.g. a PIN-code (Personal Identification Number). By means of the interface for SMS, the subscriber 100 may send messages to the system, whereby the system performs the desired operations. Examples on operations provided to a subscriber 100 by the alarm system are:

- putting on/off sensors and checking of status and/or services;
- changing the alarm receivers 500 and their mutual priority;
- changing the way of alarm distribution and their mutual priority;
- adding, changing and/or withdrawing personal information;
- retrieving information about all the services and/or sensors;
- resetting a sensor;
- creating different alarm profiles and changing and withdrawing alarm profiles; and
- creating alarm groups.

The personal information comprises e.g. the name of the subscriber, the address, telephone number, mobile number, email address and identification number, but other desirable information may also be comprised.

The alarm profiles comprise information about the alarm services of a subscriber 100 and how the subscriber 100 desires the status of the sensors 101 at a certain occasion, cf. figure 3. For example, an alarm profile for a subscriber 100 may be *home*, wherein the subscriber 100 wants the security alarm and the attack alarm *on* and all the other sensors *off*. Another alarm profile may be *out* and then all sensors except e.g. the security alarm are *on*. Further, the subscriber 100 may create a number of different alarm profiles adapted to the desires and habits of the subscriber 100. By means of a remote control comprised in the system, abbreviated number in a mobile phone or a push-button phone, or by means of any

of the above-mentioned communication interfaces the subscriber 100 may easily change from the *home* profile to the *out* profile when leaving the house, e.g. going to work. Further, the system allows the subscriber 100 to specify between which time points a certain alarm profile is to be activated.

An alarm group may for example be a neighbor group, in which group all the neighbors, which are subscribers 100 may be comprised, but it could also be another group of people for example relatives or friends to the subscriber 100. A specific subscriber 100 only needs to specify if a certain sensor 101 is to be connected to the neighbor group, wherein the system automatically retrieves information about the subscriber 100, which are neighbors to the specific subscriber 100, and wherein the system stores this information together with the alarm distribution and alarm priority in the alarm services of the specific subscriber 100, and wherein these neighbors become alarm receivers 500. Thus, the neighbor group will be alarmed by alarms triggered by this certain sensor 101, which may be desirable with e.g. burglar alarms, security alarms, attack alarms and fire alarms. Further, the specific subscriber 100 may make changes in the alarm group, e.g. withdraw alarm receivers 500 or change the alarm distribution. If an alarm is triggered at some subscriber 100 connected to the functions of the alarm group, the persons in the group will be dialed up, either one at a time in a certain priority order or all at the same time. A voice may for example say "the fire alarm at Jill Hudson is activated". This function is only a message function and not usual alarm distribution. Persons connected to the neighbor group may thus not stop the alarm distribution but only receiving messages. However, in another embodiment of the invention the alarm receivers 500 may cancel the alarm. A neighbor can relatively easy, by means of smoke in the staircase, decide whether it is a fire or not, and then call the fire brigade, i.e. it is an individual that alarms the fire brigade and not a system. An alternative is that the sensors 101 with short sounds indicate a current burglary or a fire in the staircase. By selecting the alarm group, the subscriber 100 also gets to know the number and the people connected to the alarm group.

Further, the communication interface 210 comprises also an interface for an administrator 201, wherein the administrator 201 may e.g.:

- maintain the password of the subscriber 100, i.e. withdraw, add or change a password;
- check the information stored;
- perform examination of all the components comprised in the alarm system; and
- add or withdraw a subscriber 100 and connect a collecting unit 102 to a subscriber 100.

The administrator 201 may thus manage all new subscription, subscribers forgetting their PIN-codes, removing old subscription etc. Further, the administrator 201 may also occasionally deactivate a subscription if the subscriber 100 for example has not paid the bill. The administrator 201 is also arranged to see all the settings done by a customer 100,

and thus also to act as telephone or Internet support helping the customer 100 to configure her/his alarm services.

The interface 210 comprises also an interface for communication between the alarm receiver 500 and the central alarm unit 400. By means of this interface alarms are distributed to the alarm receivers 500 and to the central alarm unit 400 in a way defined by the subscriber 100 and by means of which interface the alarm receiver 500 and/or the central alarm unit 400 may confirm received alarm. If the alarm receiver 500 or the central alarm unit 400 with the highest priority do not confirm an alarm, the system according to the invention will alarm the alarm receiver 500 or the central alarm unit 400 with the second highest priority. Further, the central alarm server 200 may before changing alarm receiver 500 or central alarm unit 400 send a new message to the current alarm receiver 500 or the current central alarm unit 400, but with the way of alarm distribution having the second highest priority. Thus, the system according to the invention, supports a subscriber 100 to arbitrary prioritize alarm receivers 500 and central alarm unit 400 and to arbitrary prioritize the way of alarm distribution.

In one embodiment of the system according to the invention the property-holder has hers/his own user interface, by means of which she/he may administrate from which tenants/subscribers 100 he want to receive alarm. This to be able to prevent alarm from subscribers 100, who is for example careless with their alarm. In this embodiment, the property-holder mentions e.g. the telephone numbers where he may be reached. It is possible to make one caretaker profile per address and number, i.e. the address given by the subscriber 100, and thus control where the alarm is transmitted.

An alarm may for example be distributed to a cellular phone of an alarm receiver 500 in the shape of a voice message or an SMS-message, but the alarm may also be distributed to a receiver 500 as a voice message to a stationary telephone or as an electronic mail.

At alarm distribution by means of telephones, one or several alarm receivers 500 defined by the subscriber 100 are called, wherein a prerecorded alarm message is transmitted to the receivers 500. In the case of for example a fire alarm, the alarm message may be constituted by "The fire alarm is triggered. Press 1 to call personal service. Press 9 and square to ignore and cancel the alarm. Put down or wait for the alarm to be transmitted to the next receiver." In one embodiment of the invention, the alarm receivers 500 may choose if she/he wants to a) call a central alarm unit 400, b) transmit the alarm to the next alarm receiver 500, c) interrupt the alarm distribution. If the alarm receiver 500 does not do anything the call is interrupted and automatically transmitted to the next alarm receiver 500 in the priority order. If the alarm receiver 500 choose to chancel the alarm, the alarm profile is set to *home*. The alarm receiver 500 is informed about this and is put into the profile managing position. This means that the subscriber 100/receiver 500 may use this method to cancel the alarm when coming home. At for example a fire alarm, the alarm may

also be distributed via a locally arranged siren starting to warn people in the proximity of the alarm. Further, the system according to the invention provides the subscriber 100 to decide whether the locally siren is to be on or off, wherein the subscriber 100 by means of any of the communication interfaces 210 may activate or deactivate the siren.

At alarm distribution by means of SMS, a message is sent in the shape of for example "The fire alarm is triggered" to one or several alarm receivers 500, wherein the message also comprise the time for and the location of the alarm.

Further, an alarm may be sent to a central alarm unit 400 via e.g. a cable or ISDN, wherein a so-called SIA-3 protocol (Security Industry Standard) or another security protocol for communication between alarm systems is used. By alarm distribution by means of the SIA-3 protocol, the alarm is distributed to the central alarm unit 400, wherein the central alarm unit 400 automatically identifies the type of alarm and the address from where it is sent, and thereafter take the necessary measure. In the case of for example a fire alarm, the central alarm unit 400 may automatically send a fire-fighting vehicle to the address where the sensor 101 is located. The central alarm unit 400 receives also an indication on the existing system managing older alarms that an alarm has been triggered at a subscriber 100. The operator may thus change to a browser, wherein the central alarm unit 400 has its own interface for the alarm system. Thus, the operator sees the alarm triggered, when, e.g. at what time and the alarm path. The operator has further access to the contact information of the subscriber 100 and may thus manually call and try to get contact with different people. The operator also keeps a log book comprising information about the measures taken. The central alarm unit 400 is also administrating the codes for the subscriber 100, and the password for canceling an alarm. These codes and passwords may comprise both numbers and letters. Further, the central alarm unit 500 makes it possible to interrupt a current alarm distribution by means of the subscriber information.

To provide an alarm system showing high degree of security a subscriber 100 and an administrator 201 has to give a specific user name and a password to get access to information comprised in the system. Further, only a few numbers of log-in trials are allowed, e.g. five times. If a subscriber 100 gives a wrong password five times, the system will interlock hers/his access to the system.

The alarm system according to the invention comprises further an alarm delay, i.e. a delay of the alarm a certain time before distributing the alarm further to one or several alarm receivers 500, central alarm unit 400 or until a locally arranged siren starts to sound. This alarm delay is performed outside the surveyed area in the central alarm server 200. When an alarm signal is received in the central alarm server 200 a timer starts, whereby the alarm is distributed further after a certain time period, which time period is defined by the subscriber 100 or by the administrator 201. This alarm delay makes it possible for a subscriber 100 to cancel an alarm, which may be desirable when for example the burglar alarm has been triggered when the subscriber 100 arrived home. The subscriber 100

cancels the alarm by using a cellular phone and by means of logging in on the user specific web site and giving the user specific user name and password, or by means of a press-button telephone calling the central alarm server 200 and giving the specific user name and password and thereby getting access to the alarm services. Further, the alarm may be canceled by a remote control communicatively coupled, preferably wireless, to the sensors 101. For example, the subscriber 100 may, when coming home from work, change the alarm profile from *out* to *home*, by means of the remote control, whereby an alarm signal from the burglar alarm is canceled.

Since the alarm is immediately transmitted from the sensors 101, directly or via the collecting unit 102, to the central alarm server 200 and since the alarm delay is arranged externally, the system prevents an unauthorized person, e.g. a burglar, to interrupt the alarm by cutting the alarm cable or by destroying the sensors 101 and/or the collecting unit 102, which units 101, 102 are arranged within the surveyed area.

The alarm system according to the present invention comprises further a filtration of alarm, whereby the load on the central alarm unit 400 is reduced, implying the use of the central alarm unit 400 for an increased number of alarm subscribers 100 than the number the central 400 is dimensioned for. The alarm filtration is achieved by allowing the subscribers 100 themselves to define one or several alarm receivers 500, whereby not all the alarms are sent to the central alarm unit 400.

Preferably, the system according to the invention is implemented for the use of broadband, i.e. implemented in a communication network providing two way communication capacity with information speeds of preferably 10 Mb per second or more, wherein the communication between the collecting units 102 and the central alarm server 200 occurs by means of broadband. Broadband is especially suitable since it provides a permanent communicative connection and makes it possible to transmit large information packets, e.g. images from surveying cameras, without interfering with other communications. Thus, the present invention is especially suitable for use in multiple family housing having broadband connection, wherein the system further may provide alarm services to a plurality of alarm buyers/subscribers 100 to a price favorable for the subscriber 100. However, the present invention may be implemented in another communication system providing a permanent communicative connection, e.g. communication system using GPRS (General packet Radio Service).

In a further development of the system according to the invention, the sensors 101 are communicatively coupled to the central alarm server 200 via a router or a switch. In this embodiment, each sensor 101 comprises an IP address, another address or another type of identification by means of which the central alarm server 200 identifies the sensors 101. Further, each sensor 101 sends automatically and periodically, e.g. once a minute, a signal to the central alarm server 200 informing about the status of the sensor 101. If a communication from only one sensor 101 is interrupted an alarm is triggered and

transmitted to the alarm server 200, which starts an alarm distribution according to the desires of the subscriber 100. If the communication from a plurality of apartments within the same area, e.g. from the same switch, is interrupted, the system assumes that the network has operational problems. Then a message, comprising information about what is wrong, is sent to the operator, whereby necessary measures may be taken to overcome the fault.

In another embodiment of the invention, the sensors 101 may be arranged at or integrated with different kinds of equipment existing within the surveyed area. For example, the sensors 101 may be arranged at a personal computer (PC), a television receiver, a stereo, a vehicle, or the like. In the case of theft of such an alarmed equipment, the status signals from the sensors 101 to the collecting unit 102 will fail to be transmitted when the equipment is removed from the surveyed area, wherein the collecting unit 102 will send a message about the theft to the central alarm server 200. The central alarm server 200 will, if the alarm is not canceled, after a certain alarm delay transmit the alarm to the subscriber 100 and/or a predefined alarm receiver 500 and/or the central alarm unit 400. Thus, the system according to the invention may also be used as a theft alarm.

Multiples of alarm may be caused by for example a great fire, a massive burglar raid, war or the like. However, these occasions are quit rare, and it is more probable that possible multiples of alarms are false alarms caused by for example hackers. To prevent this, the system according to the invention uses encryption. When receiving more than e.g. 1000 alarm within a time period of for example 10 seconds, these alarms will be blocked or canceled.

In the system according to the invention will, in connection with a failure of power supply in an apartment, the hardware, i.e. the sensors 101 and the collecting unit 102, have enough internal power supply to transmit a message about the failure of power supply before they fall out of power. In this way, it is possible to separate a usual operation alarm from a failure of power supply. This is especially important when the sensors are arranged in for example freezers, whereby it is possible to save for example goods in the freezer in connection with a failure of power supply.

With a system according to the invention, no stationary control box arranged to turn on or off alarm is required, since the sensors 101 may be controlled as already mentioned by using for example an abbreviated number from the cellular phone or a push-button telephone of the subscriber 100. To simplify certain common operations the system according to the present invention comprises also a remote control, by means of which the subscriber 100 easily may change alarm profile, e.g. from *out* to *home* profile when coming home from work. When leaving the home the subscriber 100 presses the remote control to change alarm profile. For example, a melody is played to indicate to the subscriber 100 that the alarm is going to change alarm profile and a beep for a certain time period, e.g. 30 seconds, indicates to the subscriber 10 the time within which time the subscriber 100 has to

leave the apartment. Further, a subscriber 100, who get uncertain whether she/he activated the alarm before leaving the home, may by means of a cellular phone or a computer log in on the user specific web site, wherein the subscriber 100 receives status information of the sensors 101. For example, a voice may tell the subscriber 100 which one of the alarm profiles that is selected. Thereafter, the subscriber 100 may press a number on e.g. the cellular phone or computer to select an alarm profile, wherein the selected profile is shown to the subscriber 100, either by means of a voice saying the profile or a display of the profile on the screen. This may be repeated an arbitrary number of times until the subscriber 100 is satisfied with the selected alarm profile. By means of finishing the telephone call or by means of logging off, the function is finished. A subscriber 100 may further store the log in procedure in for example a telephone book as for example *home*, *out*, or *vacation* and thereby may the subscriber 100 change profile by dialing the number corresponding to a desired alarm profile. When coming home from work, the subscriber 100 preferably use the remote control to deactivate an alarm and putting the alarm in the *home* profile. If the remote control is broken or if the customer does not manage to deactivate the alarm, an alarm will be triggered and thus the alarm distribution will start. If the subscriber 100 himself is the first person in the alarm distribution, the subscriber 100 has the opportunity to stop the alarm here. Otherwise, the subscriber 100 has to dial the central alarm unit 400 and give hers/his user name and password to cancel the alarm. If the subscriber 100 has forgotten the PIN code the alarm will continue. The subscribers 100 who have forgotten or lost their password have to contact the alarm administrator 201 to get a new PIN code, wherein this code is transmitted to the subscriber 100 either by means of an e-mail or ordinary mail delivery.

One embodiment of the system according to the invention will now be described with reference to figure 4. Figure 4 shows schematically a flow chart of control method and control program according to one embodiment of the invention. For the sake of clarity, this embodiment will be described using one sensor 101 communicatively coupled to a collecting unit 102. However, it should be understood that the description is also valid in the case of a plurality of sensors 101, and in the case of one or a plurality of sensors 101 integrated with the collecting unit 102 constituting an integrated alarm unit.

In the step 1002 a sensor signal is transmitted from a sensor 101 to the external alarm server 200. The alarm server checks in the step 1004, which one of the alarm profiles that is activated for the current sensor 101, if the sensor 101 according to the profile is shut off no measure is taken 1006. If on the other hand, the sensor 101 is activated a timer is started 1008, wherein one timer is arranged in the alarm server 200 and another timer may be arranged in connection to the sensor 101. A subscriber 100 has then a certain time period to cancel an alarm, which is checked in step 1010.

The subscriber 100 has in this embodiment two alternatives to shut down or cancel the alarm. Firstly, the alarm may be canceled by means of e.g. a remote control or a

stationary check unit arranged within the surveyed area, wherein the canceling is performed via the sensor 101 according to the steps 1012-1018. Secondly, the alarm may be canceled by means of using an Internet application, e.g. by means of a WAP telephone, wherein the canceling is performed via the alarm server 200 according to the steps 1020-1026.

In the steps 1012-1018, a canceling signal is received by the sensor 101, which sensor 101 further transmits the signal to the alarm server 200. In the step 1016 the alarm is canceled in both the sensor 101 and the alarm server 200 and in the step 1018 the timers are reset.

As already mentioned, a subscriber 100 may cancel the alarm via the alarm server 200, wherein the alarm server in the steps 1020 and 1022 receives and distributes, respectively, the canceling signal further to the sensor 101. In the step 1024, the alarm is turned off in both the sensor 101 and the alarm server 200 and in the step 1026 the timers are finally reset.

If the alarm is not canceled within a predetermined time period, a siren starts 1032 to sound within the surveyed area, and the alarm server 200 distributes in step 1034 the alarm further to an alarm receiver 500 according to the distribution list defined by the subscriber 100.

A slow subscriber 100 who does not manage to cancel the alarm within the predetermined time period may however in the step 1036 cancel the alarm according to the steps 1012-1018 or 1020-1026 as described above. When the canceling is completed, the siren in step 1040 is also canceled and the alarm distribution is interrupted in step 1042.

If no measure is taken 1044 the alarm distribution is continued in the step 1046 and the siren continues to sound 1048. This is for example what happens when a burglar breaks into an alarmed house. The burglar may not cancel the alarm by sabotage 1050, e.g. by cutting off a cable, but the alarm distribution continues 1052.

In figure 5 a schematic flow chart is shown, exemplifying the methods steps for managing the sensor signals from a smoke detector, wherein:

- 2000 start;
- 2002 is smoke detected?;
- 2004 send a sensor signal to an external alarm server indicating that smoke has been detected;
- 2006 activate local siren;
- 2008 has the alarm been confirmed by any alarm receiver?;
- 2010 has a predefined time period, e.g. 3 minutes, lapsed?;
- 2012 turn off the siren;
- 2014 has the alarm been confirmed by any alarm receiver?

Figure 6 shows a schematic flow chart for the control method and the control program, for managing the periodical signals, the so called heartbeat messages, which are sent from a sensor or an alarm unit to the alarm server according to one embodiment of the

invention. The order of the steps may in different embodiments be different from the one shown in the figure 6 and described below:

- 3100 send a heartbeat message to a pre-selected external unit, e.g. an external alarm server;
- 3102 the external unit detects a heartbeat message, i.e. 3104 the alarm unit is ok;
- 3102 the external unit detects no heartbeat message, wherein
  - 3106 the external unit sends a status request;
    - 3108 a response from an alarm unit fails to appear;
      - 3110 sabotage or an alarm unit failure;
      - 3112 start alarm distribution;
    - 3114 responses from a plurality of alarm units fail to appear;
      - 3116 operation failure;
      - 3118 contact operation maintenance, central or local.

A realization of the invention comprises both hardware components, such as apparatus components, and software components in the shape of a computer program product. The computer program product comprises functional units arranged to control one or several data processing means to perform the functions or the method steps according to the invention.

The present invention will now be described using some examples. In these examples is also the inventive concept of reducing the load on an external central alarm unit 400 apparent.

Example 1. Burglar alarm

A burglar breaks in to the apartment of George and Jill on the fourth floor. When the burglar enters the apartment the I/R sensor 101 is activated and a siren indicates the housebreaking. The burglar tries to stop the alarm by destroying the sensor 101 and cutting off the alarm cable. However, in the system according to the present invention the alarm signal has already been sent to the externally located alarm server 200 wherein the signal is intermediately stored. Since the alarm has not been correctly canceled the system will distribute an alarm signal to the first alarm receiver 500, which in this case is George. However, George does not answer, and thus after a number of trials the signal is transmitted to the second alarm receiver 500 in the priority order. This second alarm receiver 500 is Jill, who is working close to the home, but she does not want to go home to the burglar. Instead she presses a button on the cellular phone and the alarm signal is transmitted further to the central alarm unit 400. At the central alarm unit 400 the operator notice that George and Jill have a subscription on free security help and thus the operator sends a security guard to George's and Jill's place. Alternatively or additionally, Jill and

George are connected to a neighbor group comprising their neighbor John, whereby he is alarmed by a telephone call. When John opens his door and looks at Jill and George's place he can see that their door is broken. John calls the police, who arrive to the place a couple of minutes later and arrest the burglar.

Example 2. Fire alarm

George and Jill have gone on vacation. They have activated their alarm in the vacation profile, which i.a. implies that alarms are transmitted to the mobile phones of George and of the caretaker of the house or to other members of the alarm group. In the house Jill and George have forgotten a candle, whereby a curtain starts to burn. Then the fire detector is activated and the siren starts to sound, but no one hears this sound. At the same time, the smoke sensor 101 is also activated, whereby both George's and the caretaker's mobile phones are dialed up. However, George's mobile phone has no covering, and thus George's friend Robert is called. Robert is thus comprised in the alarm group and may thus interrupt the alarm if it is a false alarm. Robert receives the alarm message and goes to the place of Jill and George. In the staircase he meets the caretaker and they can verify that a fire is going on and thus call the fire brigade. The fire brigade arrives and extinguishes the fire.

Example 3. Safety alarm

Mary lives on the bottom floor and she is anxious about someone breaking into her place while she is at home. One evening, the door bell rings and before opening she asks "who is there?". It is a couple of girls asking for a glass of water. Mary opens the door and let them in. After entering the door, one of the girls starts to walk around in the apartment while the other talks to Mary. Mary is suspicious and presses the button on the safety alarm. Since Mary's neighbor John has the highest alarm priority he is alarmed simultaneously as for example a siren arranged at Mary's place starts to sound. The girls get frightened and try to escape, but John succeed in catching them in the staircase.

The invention has been described by way of exemplifying embodiments, but other realizations within the wording of the claims is conceivable.

CLAIMS

1. An alarm system for personal and material alarm services, comprising a number of sensors (101) communicatively connected to a collecting unit (102); wherein these components (101,102) are arranged at a place of a subscriber (100) within a surveyed area, **characterized in** that a central alarm server (200) arranged outside the surveyed area and is communicatively connected to the collecting unit (102), and in that the central alarm server (200) is arranged to perform an alarm delay, wherein the subscriber (100) may cancel an alarm within a predefined time period, but preventing an unauthorized person from stopping an alarm by e.g. cutting off an alarm cable or by destroying any of the components (101,102).

2. The system according to claim 1, **characterized in** that the central alarm server (200) is arranged to perform an automatically distribution of alarms by using a predetermined list of alarm receivers (500) and central alarm units (400) and a list comprising the ways of distribution.

3. The system according to claim 1 or 2, **characterized in** a wireless connection between the sensor (101) and the collecting unit (102).

4. The system according to any of the claims 1-3, **characterized in** the collecting unit (102) comprises an checking device (103) arranged to automatically and periodically check the sensor (101), by means of a heartbeat signal from the sensor (101), to receive information about the sensor (101) status and to check if the connection between the sensor (101) and collecting unit (102) is working.

5. The system according to claim 4, **characterized in** that the collecting unit (102) is arranged to transmit the information about the sensor (101) of the subscriber (100) and about the connection to a central alarm unit (400).

6. An alarm system for personal and material alarm services, comprising a number of sensors (101) communicatively connected to a router or switch, wherein these components are arranged at a place of a subscriber (100) within a surveyed area, **characterized in** that a central alarm server (200) arranged outside the surveyed area and is communicatively connected to the router or the switch, and in that the central alarm server (200) is arranged to perform an alarm delay, wherein the subscriber (100) may cancel an alarm within a predefined time period, but preventing an unauthorized person from stopping an alarm by e.g. cutting off an alarm cable or by destroying any of the components (101,102).

7. The system according to claim 6, **characterized in** that the central alarm server (200) is arranged to perform an automatically distribution of alarms by using a predetermined list of alarm receivers (500) and central alarm units (400) and a list comprising the ways of distribution.

8. The system according to claim 6 or 7, **characterized in** a wireless connection between the sensor (101) and the router/switch.

9. The system according to any of the claims 6-8, **characterized in** an automatically and periodically transmission of sensor status from the sensor (101) to the central alarm server (200).

10. The system according to any of the preceding claims, **characterized in** an alarm filtration, whereby the load on a central alarm unit (400) is reduced, implying that the central alarm unit (400) may be used for a larger number of subscribers (100) than it is dimensioned for.

11. The system according to claim 10, **characterized in** that the alarm filtration is received by the subscriber (100) defining one or several alarm receivers (500), whereby not all the alarms are transmitted to the central alarm unit (400).

12. The system according to any of the preceding claims, **characterized in** that the central alarm server (200) comprises a control unit (220), a check unit (230) and a memory (240), wherein the control unit (220) is arranged to managing the interactions between the central alarm server (200) and the components comprised in the system, further the control unit (230) is managing the alarm distribution and the way of alarm distribution; wherein the check unit (230) is arranged to automatically and periodically perform functionality checks on all the comprised components; and wherein the memory (240) is arranged to comprise all the information about the alarm services of the subscribers (100), to comprise information about interactions done and performed checks.

13. The system according to any of the claims 1-12, **characterized in** that the central alarm server (200) comprises a communication interface (210), by means of which wireless or wired communication is performed between the central alarm server (200) and the subscriber (100), alarm receivers (500), central alarm unit (400) or an administrator (201).

14. The system according to any of the claims 1-13, **characterized in** that the system is

arranged to be implemented to use broadband, i.e. in a communication network providing a two way capacity with information rates of preferably 10 Mb per second or more.

15. A method for personal and material alarm services, comprising a number of sensors (101) communicatively connected to a collecting unit (102); wherein these components (101,102) are arranged at a place of a subscriber (100) within a surveyed area, **characterized in** that an alarm delay is performed outside a surveyed area, wherein the subscriber (100) may cancel an alarm within a predefined time period, but preventing an unauthorized person from stopping an alarm by e.g. cutting off an alarm cable or by destroying any of the components (101,102).

16. The method according to claim 15, **characterized in** that the central alarm server (200) perform an automatically distribution of alarms by using a predetermined list of alarm receivers (500) and central alarm units (400) and a list comprising the ways of distribution.

17. The method according to claim 15 or 16, **characterized in** that the sensor (101) is wireless connected to the collecting unit (102).

18. The method according to any of the claims 15-18, **characterized in** the collecting unit (102) comprises an checking device (103), which automatically and periodically checks the sensor (101), by means of a heartbeat signal from the sensor (101), to receive information about the sensor (101) status and to check if the connection between the sensor (101) and collecting unit (102) is working.

19. The method according to claim 18, **characterized in** that the collecting unit (102) transmits the information about the sensor (101) of the subscriber (100) and about the connection to a central alarm unit (400).

20. A method for personal and material alarm services, comprising a number of sensors (101) communicatively connected to a router or switch, wherein these components are arranged at a place of a subscriber (100) within a surveyed area, **characterized in** that an alarm delay is performed outside a surveyed area, wherein the subscriber (100) may cancel an alarm within a predefined time period, but preventing an unauthorized person from stopping an alarm by e.g. cutting off an alarm cable or by destroying any of the components (101,102).

21. The method according to claim 20, **characterized in** that the central alarm server (200)

performs an automatically distribution of alarms by using a predetermined list of alarm receivers (500) and central alarm units (400) and a list comprising the ways of distribution.

22. The method according to claim 20 or 21, **characterized in** that the sensor (101) is wireless connected to the router/switch.

23. The method according to any of the claims 20-22, **characterized in** that sensor status is transmitted automatically and periodically from the sensor (101) to the central alarm server (200).

24. The method according to any of the claims 15-23, **characterized in** an alarm filtration, whereby the load on a central alarm unit (400) is reduced, implying that the central alarm unit (400) is used for a larger number of subscribers (100) than it is dimensioned for.

25. The method according to claim 24, **characterized in** that the alarm filtration is received by the subscriber (100) defining one or several alarm receivers (500), whereby not all the alarms are transmitted to the central alarm unit (400).

26. The method according to any of the claims 15-25, **characterized in** that the central alarm server (200) comprises a control unit (220), a check unit (230) and a memory (240), wherein the control unit (220) manages the interactions between the central alarm server (200) and the components comprised in the system, further the control unit (230) manages the alarm distribution and the way of alarm distribution; wherein the check unit (230) automatically and periodically performs functionality checks on all the comprised components; and wherein the memory (240) comprises all the information about the alarm services of the subscribers (100), the information about interactions checks.

27. The method according to any of the claims 15-26, **characterized in** that the central alarm server (200) comprises a communication interface (210), by means of which the central alarm server (200), the subscriber (100), alarm receivers (500), central alarm unit (400) and an administrator (201) perform wireless or wired communication.

28. The method according to any of the claims 15-27, **characterized in** that the system is implemented to use broadband, i.e. in a communication network providing a two way capacity with information rates of preferably 10 Mb per second or more.

29. A computer program product for material and personal alarm services, comprising means to arranged to control a data processing system to perform the functions and the method steps according to any of the preceding claims.

30. An alarm system for personal and material alarm services, comprising a sensor (101) communicatively coupled to a information communication unit within a surveyed area, **characterized in** that a central alarm server (200) arranged separated from the surveyed area and is devised to receive a signal from the sensors (101), and in that the central alarm server (200) is arranged to be alerted dependent on said signal and to perform an alarm delay for a predetermined period of time.

31. The system according to claim 30, wherein the alarm is interruptable during said alarm delay period by an authorized user.

32. The system according to claim 31, wherein the alarm is distributed to a predefined alarm receiver (500) unless the alarm is interrupted within said alarm delay period.

33. The system according to claim 30, wherein the sensor (101) is arranged to communicate a heartbeat signal when in operation:

34. The system according to claim 33, wherein the central alarm server (200) is devised to receive said heartbeat signal from the sensor (101) and to be alerted in the case of non-appearing heartbeat signal.

AMENDED CLAIMS

[received by the International Bureau on 12 November 2001 (12.11.01);
original claims 1-34 replaced by amended claims 1-34 (5 pages)]

1. An alarm system for personal and material alarm services, comprising a number of sensors (101) communicatively connected to a collecting unit (102); wherein these components (101,102) are arranged at a place of a subscriber (100) within a surveyed area, **characterized in** that a central alarm server (200) arranged outside the surveyed area and is communicatively connected to the collecting unit (102), and in that the central alarm server (200) is arranged to perform an alarm delay, wherein the subscriber (100) may cancel an alarm within a predefined time period, but preventing an unauthorized person from stopping an alarm by e.g. cutting off an alarm cable or by destroying any of the components (101,102).

2. The system according to claim 1, **characterized in** that the central alarm server (200) is arranged to perform an automatically distribution of alarms by using a predetermined list of alarm receivers (500) and central alarm units (400) and a list comprising the ways of distribution.

3. The system according to claim 1 or 2, **characterized in** a wireless connection between the sensor (101) and the collecting unit (102).

4. The system according to any of the claims 1-3, **characterized in** the collecting unit (102) comprises an checking device (103) arranged to automatically and periodically check the sensor (101), by means of a heartbeat signal from the sensor (101), to receive information about the sensor (101) status and to check if the connection between the sensor (101) and collecting unit (102) is working.

5. The system according to claim 4, **characterized in** that the collecting unit (102) is arranged to transmit the information about the sensor (101) of the subscriber (100) and about the connection to the central alarm server (200).

6. An alarm system for personal and material alarm services, comprising a number of sensors (101) communicatively connected to a router or switch, wherein these components are arranged at a place of a subscriber (100) within a surveyed area, **characterized in** that a central alarm server (200) arranged outside the surveyed area and is communicatively connected to the router or the switch, and in that the central alarm server (200) is arranged to perform an alarm delay, wherein the subscriber (100) may cancel an alarm within a predefined time period, but preventing an unauthorized person from stopping an alarm by e.g. cutting off an alarm cable or by destroying any of the components.

7. The system according to claim 6, **characterized in** that the central alarm server (200) is arranged to perform an automatically distribution of alarms by using a predetermined list of alarm receivers (500) and central alarm units (400) and a list comprising the ways of distribution.

8. The system according to claim 6 or 7, **characterized in** a wireless connection between the sensor (101) and the router/switch.

9. The system according to any of the claims 6-8, **characterized in** an automatically and periodically transmission of sensor status from the sensor (101) to the central alarm server (200).

10. The system according to any of the preceding claims, **characterized in** an alarm filtration, whereby the load on a central alarm unit (400) is reduced, implying that the central alarm unit (400) may be used for a larger number of subscribers (100) than it is dimensioned for.

11. The system according to claim 10, **characterized in** that the alarm filtration is achieved by the subscriber (100) defining one or several alarm receivers (500), whereby not all the alarms are transmitted to the central alarm unit (400).

12. The system according to any of the preceding claims, **characterized in** that the central alarm server (200) comprises a control unit (220), a check unit (230) and a memory (240), wherein the control unit (220) is arranged to managing the interactions between the central alarm server (200) and the components comprised in the system, further the control unit (220) is managing the alarm distribution and the way of alarm distribution; wherein the check unit (230) is arranged to automatically and periodically perform functionality checks on all the comprised components; and wherein the memory (240) is arranged to comprise all the information about the alarm services of the subscribers (100), to comprise information about interactions done and performed checks.

13. The system according to any of the claims 1-12, **characterized in** that the central alarm server (200) comprises a communication interface (210), by means of which wireless or wired communication is performed between the central alarm server (200) and the subscriber (100), alarm receivers (500), central alarm unit (400) or an administrator (201).

14. The system according to any of the claims 1-13, **characterized in** that the system is

arranged to be implemented to use broadband, i.e. in a communication network providing a two way capacity with information rates of preferably 10 Mb per second or more.

15. A method for personal and material alarm services, comprising a number of sensors (101) communicatively connected to a collecting unit (102); wherein these components (101,102) are arranged at a place of a subscriber (100) within a surveyed area, **characterized in** that an alarm delay is performed outside a surveyed area, wherein the subscriber (100) may cancel an alarm within a predefined time period, but preventing an unauthorized person from stopping an alarm by e.g. cutting off an alarm cable or by destroying any of the components (101,102).

16. The method according to claim 15, **characterized in** that the central alarm server (200) perform an automatically distribution of alarms by using a predetermined list of alarm receivers (500) and central alarm units (400) and a list comprising the ways of distribution.

17. The method according to claim 15 or 16, **characterized in** that the sensor (101) is wireless connected to the collecting unit (102).

18. The method according to any of the claims 15-17, **characterized in** the collecting unit (102) comprises an checking device (103), which automatically and periodically checks the sensor (101), by means of a heartbeat signal from the sensor (101), to receive information about the sensor (101) status and to check if the connection between the sensor (101) and collecting unit (102) is working.

19. The method according to claim 18, **characterized in** that the collecting unit (102) transmits the information about the sensor (101) of the subscriber (100) and about the connection to the central alarm server (200).

20. A method for personal and material alarm services, comprising a number of sensors (101) communicatively connected to a router or switch, wherein these components are arranged at a place of a subscriber (100) within a surveyed area, **characterized in** that an alarm delay is performed outside a surveyed area, wherein the subscriber (100) may cancel an alarm within a predefined time period, but preventing an unauthorized person from stopping an alarm by e.g. cutting off an alarm cable or by destroying any of the components.

21. The method according to claim 20, **characterized in** that the central alarm server (200)

performs an automatically distribution of alarms by using a predetermined list of alarm receivers (500) and central alarm units (400) and a list comprising the ways of distribution.

22. The method according to claim 20 or 21, **characterized in** that the sensor (101) is wireless connected to the router/switch.

23. The method according to any of the claims 20-22, **characterized in** that sensor status is transmitted automatically and periodically from the sensor (101) to the central alarm server (200).

24. The method according to any of the claims 15-23, **characterized in** an alarm filtration, whereby the load on a central alarm unit (400) is reduced, implying that the central alarm unit (400) is used for a larger number of subscribers (100) than it is dimensioned for.

25. The method according to claim 24, **characterized in** that the alarm filtration is achieved by the subscriber (100) defining one or several alarm receivers (500), whereby not all the alarms are transmitted to the central alarm unit (400).

26. The method according to any of the claims 15-25, **characterized in** that the central alarm server (200) comprises a control unit (220), a check unit (230) and a memory (240), wherein the control unit (220) manages the interactions between the central alarm server (200) and the components comprised in the system, further the control unit (230) manages the alarm distribution and the way of alarm distribution; wherein the check unit (230) automatically and periodically performs functionality checks on all the comprised components; and wherein the memory (240) comprises all the information about the alarm services of the subscribers (100), the information about interactions checks.

27. The method according to any of the claims 15-26, **characterized in** that the central alarm server (200) comprises a communication interface (210), by means of which the central alarm server (200), the subscriber (100), alarm receivers (500), central alarm unit (400) and an administrator (201) perform wireless or wired communication.

28. The method according to any of the claims 15-27, **characterized in** that the system is implemented to use broadband, i.e. in a communication network providing a two way capacity with information rates of preferably 10 Mb per second or more.

29. A computer program product for material and personal alarm services, comprising means to arranged to control a data processing system to perform the functions and the method steps according to any of the preceding claims.

30. An alarm system for personal and material alarm services, comprising a sensor (101) communicatively coupled to a information communication unit within a surveyed area, **characterized in** that a central alarm server (200) arranged separated from the surveyed area and is devised to receive a signal from the sensors (101), and in that the central alarm server (200) is arranged to be alerted dependent on said signal and to perform an alarm delay for a predetermined period of time.

31. The system according to claim 30, wherein the alarm is interruptable during said alarm delay period by an authorized user.

32. The system according to claim 31, wherein the alarm is distributed to a predefined alarm receiver (500) unless the alarm is interrupted within said alarm delay period.

33. The system according to claim 30, wherein the sensor (101) is arranged to communicate a heartbeat signal when in operation.

34. The system according to claim 33, wherein the central alarm server (200) is devised to receive said heartbeat signal from the sensor (101) and to be alerted in the case of non-appearing heartbeat signal.

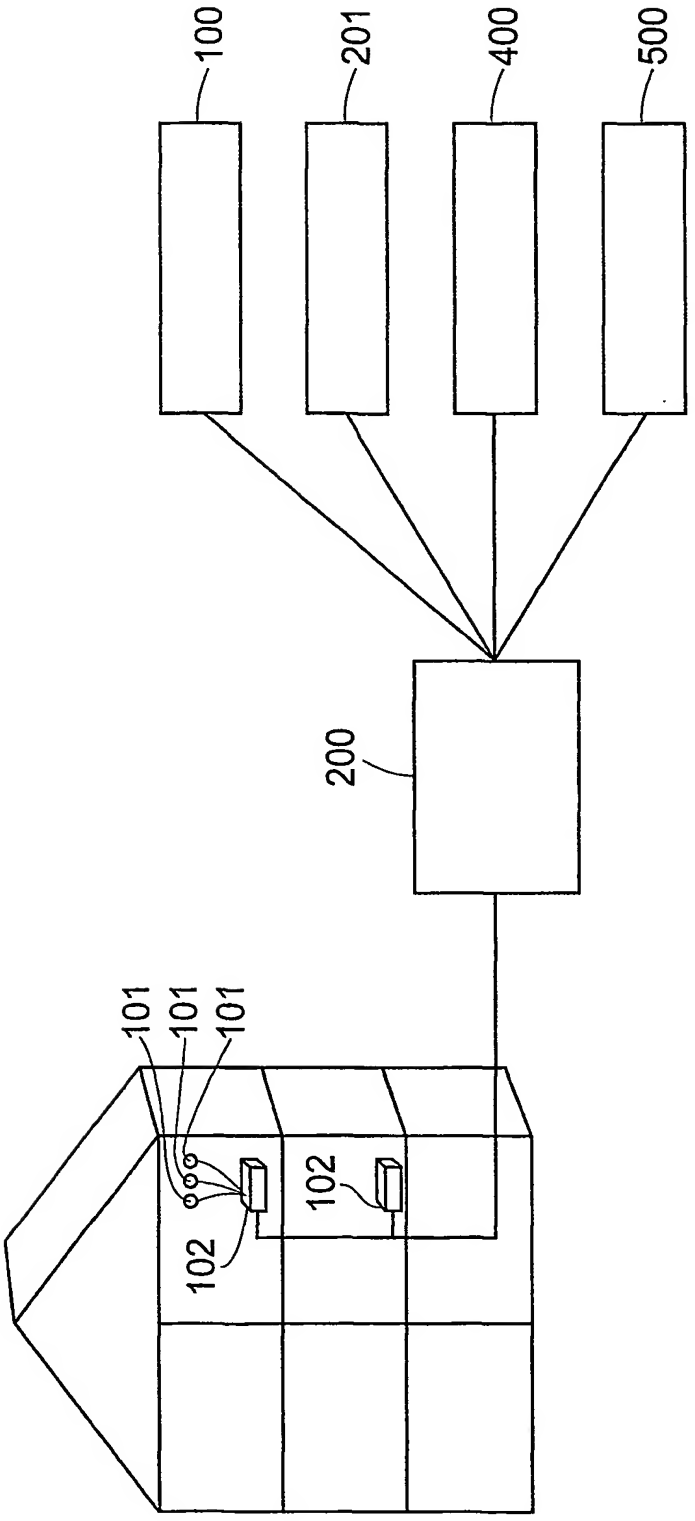
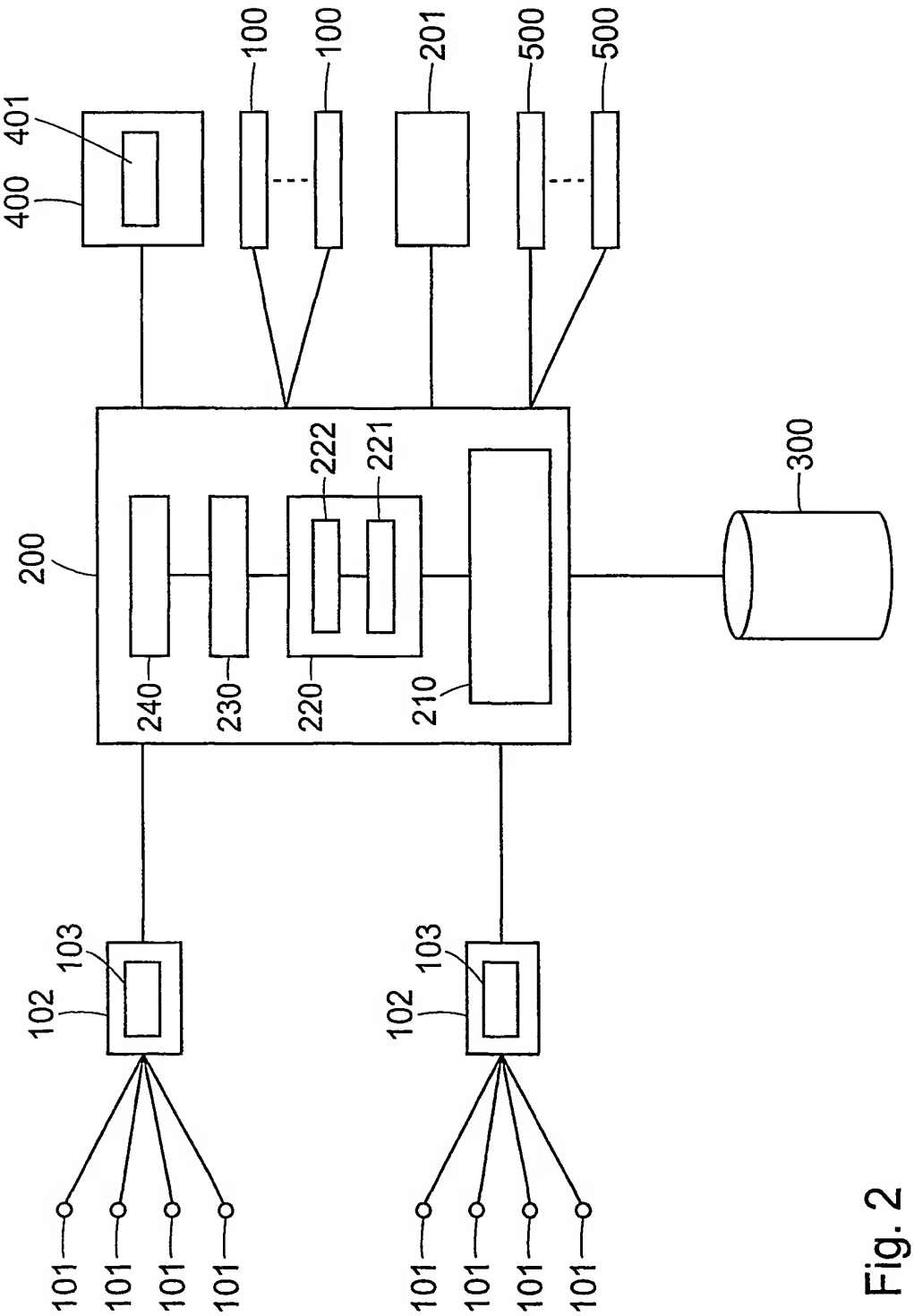


Fig. 1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200
240
230
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210
103
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101

Fig. 2

Sensor / Profile	Fire	Burglary	Safety
Home	on	off	on
Out	on	on	off
Vacation	on	on	off
Party	off	off	off

Fig. 3

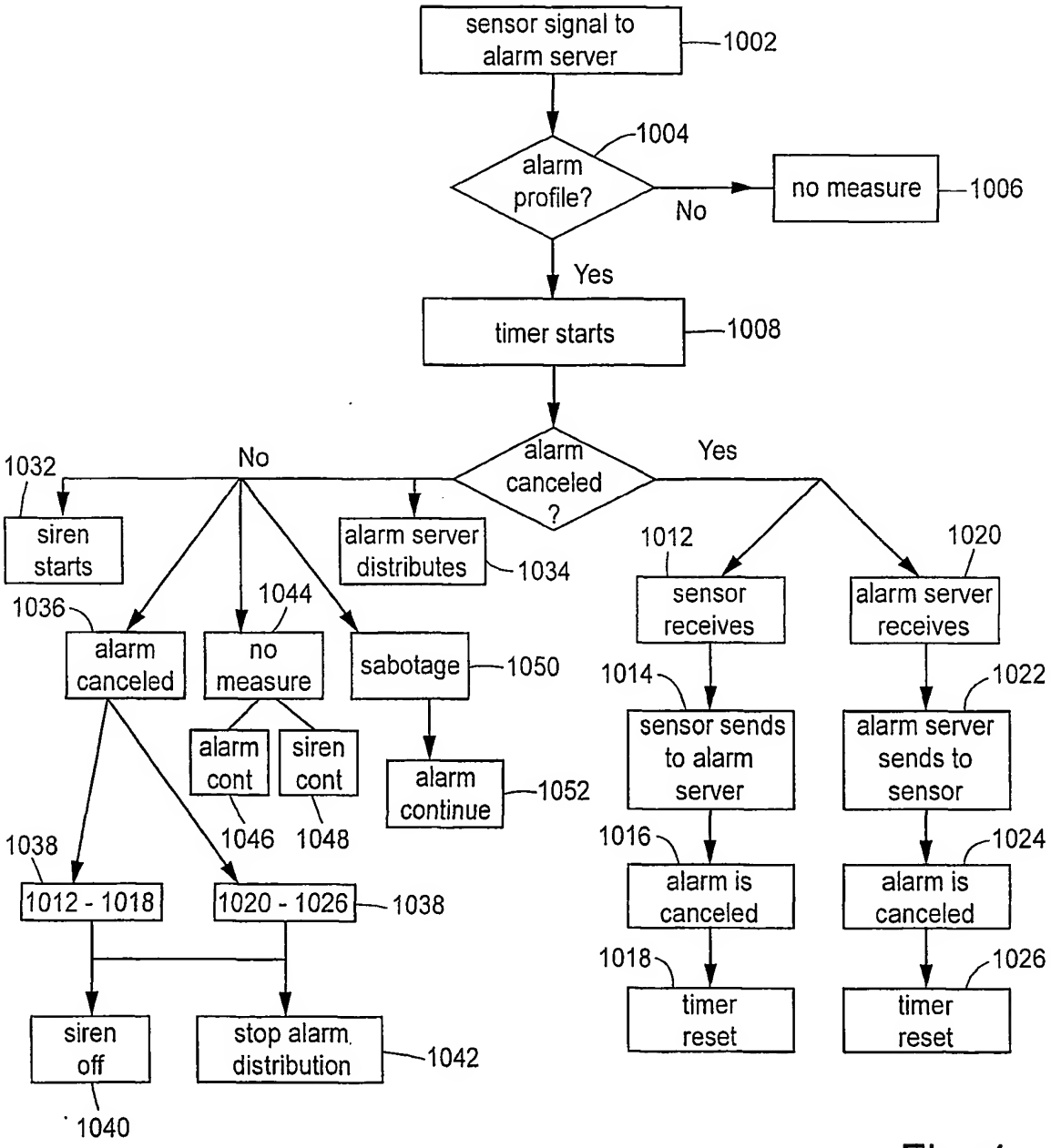
sensor signal to alarm server
1002
alarm profile?
1004
No
no measure
1006
Yes
timer starts
1008
alarm canceled ?
No
Yes
1032
siren starts
alarm server distributes
1034
1036
alarm canceled
1044
no measure
sabotage
1050
alarm cont
siren cont
alarm continue
1052
1046
1048
1038
1012 - 1018
1020 - 1026
1038
siren off
1040
stop alarm distribution
1042
1012
sensor receives
1014
sensor sends to alarm server
1016
alarm is canceled
1018
timer reset
1020
alarm server receives
1022
alarm server sends to sensor
1024
alarm is canceled
1026
timer reset

Fig. 4

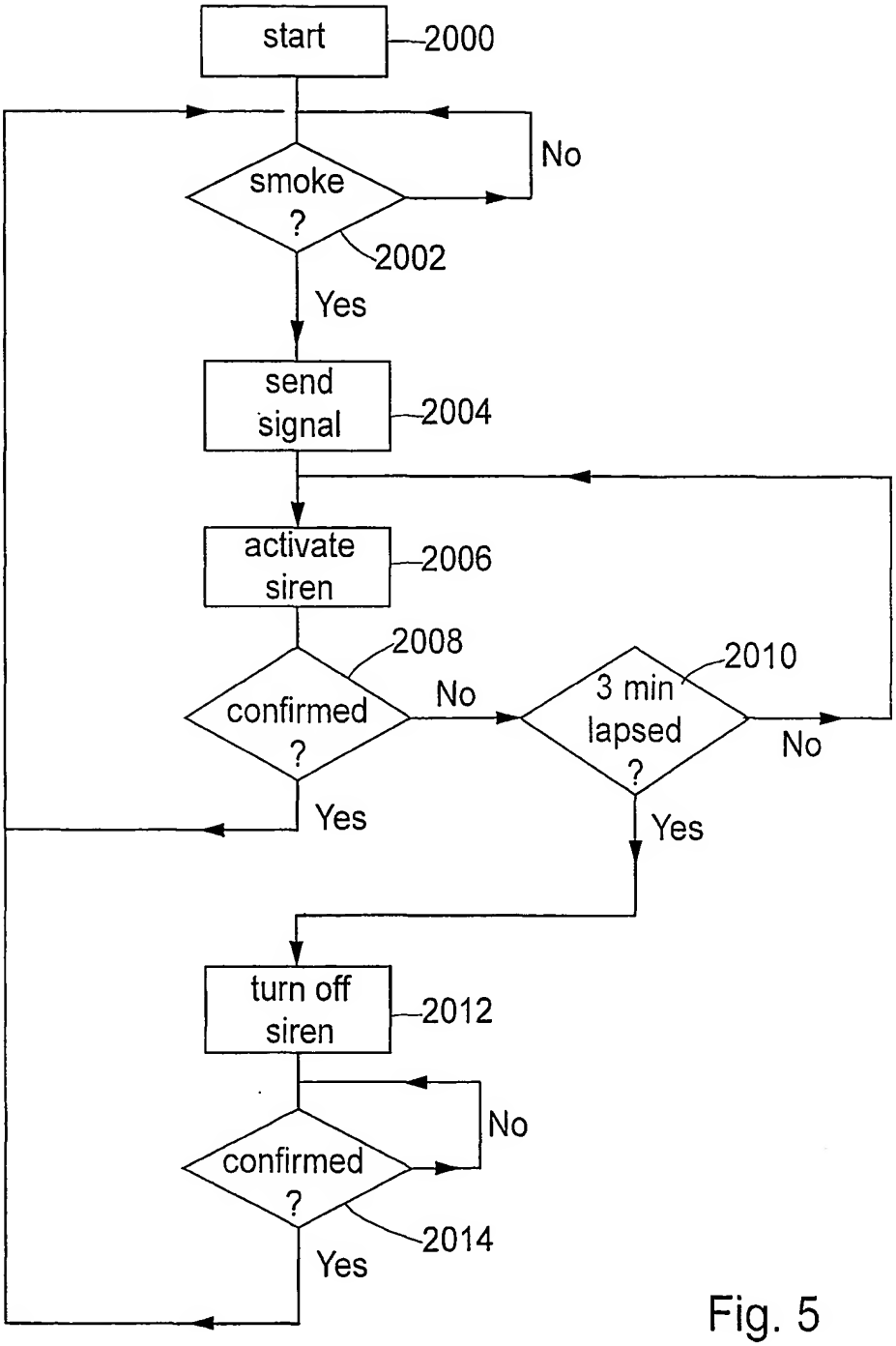
start
2000
smoke ?
No
2002
Yes
send signal
2004
activate siren
2006
2008
confirmed ?
No
2010
3 min lapsed ?
No
Yes
Yes
turn off siren
2012
confirmed ?
No
2014
Yes

Fig. 5

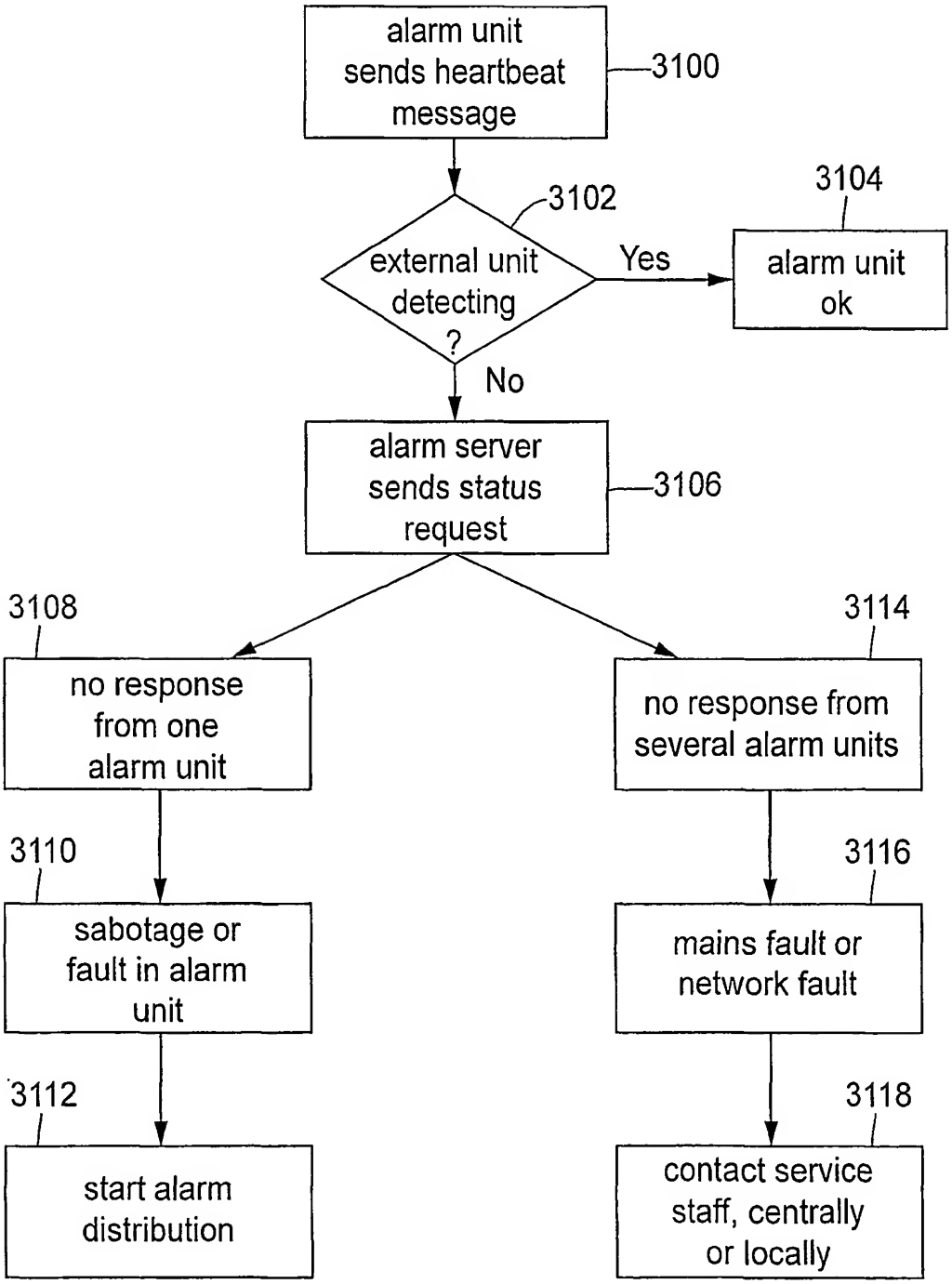
alarm unit sends heartbeat message
3100
3102
external unit detecting ?
Yes
3104
alarm unit ok
No
alarm server sends status request
3106
3108
no response from one alarm unit
3110
sabotage or fault in alarm unit
3112
start alarm distribution
3114
no response from several alarm units
3116
mains fault or network fault
3118
contact service staff, centrally or locally

Fig. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 01/01482

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G08B 27/00, G08B 25/00
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G08B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5319698 A (WILLIAM E.GLIDEWELL), 7 June 1994 (07.06.94), column 3, line 8 - column 6, line 17	1-34
Y	WO 9713230 A2 (FARRAGHER,PATRICK), 10 April 1997 (10.04.97), page 7, line 4 - page 12, line 20	1-34
Y	EP 0574230 A1 (HARTBROOK PROPERTIES LTD.), 15 December 1993 (15.12.93), column 5, line 42 - column 7, line 5; column 8, line 30 - column 9, line 10	1-34

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

* Special categories of cited documents:
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"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 Sept 2001	28 -09- 2001
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Gordana Nincovic´ /itw Telephone No. +46 8 782 25 00

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 01/01482

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	WO 9946923 A1 (SIEMENS SCHWEIZ AG), 16 Sept 1999 (16.09.99), abstract --	1-34
A	US 5200735 A (THOMAS N.HINES), 6 April 1993 (06.04.93), abstract --	1-34
A	EP 0743535 A1 (TELEFONAKTIEBOLAGET LM ERICSSON), 20 November 1996 (20.11.96), abstract --	1-34
A	WO 9917477 A2 (HONEYWELL INC.), 8 April 1999 (08.04.99), abstract --	1-34

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International application No.
PCT/SE 01/01482

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		GB 9519261 D	00/00/00
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		GB 9311819 D	00/00/00
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US 5200735 A	06/04/93	NONE	
EP 0743535 A1	20/11/96	SE 9501787 A	16/11/96
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